APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,950	07/17/2003	Charles Jay Alpert	AUS9 2003 0203 US1	1547

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EXAMINER
DINH, PAUL

ART UNIT	PAPER NUMBER
2825	

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	**Applicant(s)**
Office Action Summary	10/621,950	ALPERT ET AL.
	Examiner	**Art Unit**	
	Paul Dinh	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*17 July 2003*</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Objections

In claim 11, "the computer program product of claim A" should be changed to "the computer program product of claim [A] 7"; and

In claim 17, "the system of claim 1" should be changed to "the system of claim [1] 14"

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Kimura et al (USP 6440780)

(Claims 1, 7, 14)

a placement algorithm to place a set of objects within an IC, wherein the set of objects includes latched objects and non-latched objects (fig 4-40) and wherein the algorithm places objects to minimize clock signal delay (col 1 line 56 to col 2 line 7, col 13 lines 19-35, col 14 line 34+, col 18 lines 22-29) subject to a constraint on the placement distribution of the latched objects relative to the placement distribution of the non-latched objects (fig 4-40).

(Claims 2-3, 9-10, 15-16) wherein the latched object and non-latched object placement constraints limit the difference between the latched object center of mass and a non-latched object center of mass, wherein the latched object center of mass equals a sum of size-location products for each latched object divided by the sum of sizes for each latched object (fig 4-40, col 2 line 2+, col 3 lime 10+, col 21 line 10+), wherein the constraints require that the latched object center of mass and the non-latched center of mass both equal the center of mass for all objects (fig 4-40, col 2 line 2+, col 3 lime 10+, col 21 line 10+).

(Claims 4, 11, 17) wherein the algorithm minimizes clock signal delay by minimizing,

Subject to the placement constraint, a weighted sum of lengths of interconnects required to connect the objects as placed (col 11 line 56+, col 13 line 61+, col 21 lines 10-39).

(Claims 5, 12, 18) further comprising performing an unconstrained initial placement Algorithm to place the latched and non-latched objects to minimize the sum of interconnect Lengths (fig 1-6, 10-12, 14, 17-31, 38-40).

(Claims 6, 13, 19) further comprising synthesizing a clock tree for the objects as placed and for determining signal skew associated with the clock tree (abstract (CTS = clock tree synthesis), fig 1-3); and invoking the placement algorithm responsive to the determined signal skew exceeding a threshold value (fig 1-3)

(Claim 8) wherein the algorithm places objects further to subject to an additional constraint on non-latched object placement limiting the extent of non-latched placement asymmetry (fig 4-14, 17-20, 22-25, 27-31, 38, 40).

(Claim 20) wherein the constraint on the placement distribution of the latched objects is further characterized as a constraint on the x-axis placement distribution and the y-axis placement distribution of latched objects relative to the x-axis and y-axis placement distribution of the non-latched objects (fig 4-14, 17-20, 22-25, 27-31, 38, 40).

2.   Claims 1, 7 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Palermo et al (USP 6442739)

a placement algorithm to place a set of objects within an IC, wherein the set of objects includes latched objects and non-latched objects (fig 2A, 3-7, 10, 13-14) and wherein the algorithm places objects to minimize clock signal delay (fig 2A, 3-7, 10, 13-14) subject to a constraint on the placement distribution of the latched objects relative to the placement distribution of the non-latched objects (fig 2A, 3-7, 10, 13-14)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Dinh whose telephone number is 571-272-1890. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Paul Dinh

Patent Examiner